

## Long Term Benefits, from Organic Viticulture and Winemaking

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Temple Bruer Wines

## Soil Organic Carbon

- Significant Carbon is sequestered as Humus
- Total Organic carbon in Organic Vineyards is ~1/3<sup>rd</sup> higher than in non Organic vineyards.
- Temple Bruer has gone from 0.4% TOC to between 1.6% and 4% TOC in 15 years.

## Other Benefits

- Significant Plant available water is held by Humus
- Organic vineyards are therefore more drought tolerant
- Due to its negative charge, Humus mimics the action of a weak cation exchange resin and holds calcium, magnesium, potassium, ammonium and other minor cations such that they are available for plant growth

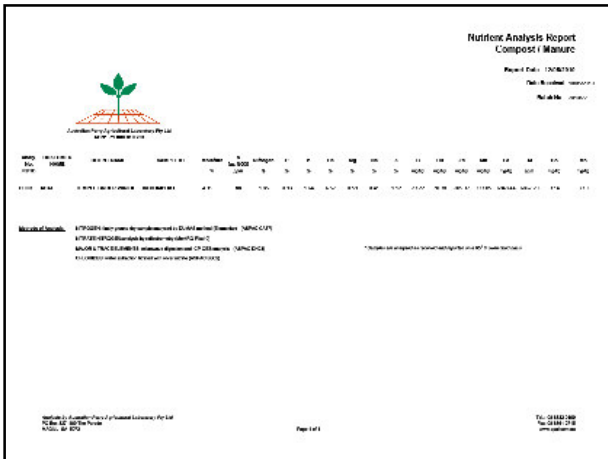
## Total Organic Carbon

- TOC is built up by a combination of cover cropping, we use a mixture of cereals and legumes, and compost.
- We compost just prior to sowing the cover crop, to grow a bigger cover crop.
- Cultivation, and the soil drying out both reduce TOC. We are trying to reduce cultivation to sowing the cover crop only
- Dry soil must be avoided as sequestered carbon is oxidised to carbon dioxide.



## Compost

- Our compost is made from grape marc, lees, and some forage harvested cereal/legume mix, occasionally with chicken manure or spent mushroom compost.



## Compost

- Provided we keep the compost aerobic (almost always) nitrogen emissions are low.
- As a nitrogen fertiliser, NOx emissions are almost zero.

## Insects

- No insecticide has been sprayed at Temple Bruer since 1975 except for spot spraying with BT for Lepidoptera damaging shoot tips being trained for new cordons.
- We have no insect pests either, all are controlled by predators, other than elephant weevil which is a similar problem to other Langhorne Creek Growers.
- Try to imagine the cost saving, and interest, of not spraying insecticides for 35 years.

## Fungal Disease

- Powdery mildew is by far the most important disease and we now have an effective control without using Sulphur in most years
- Using oil and bicarb together the efficacy is such we can eradicate this disease from some flag shoots. N.B. it is vital to go through the vineyard removing as many flag shoots as possible.
- Our control of PM is good enough for Preservative Free wines – the fruit for these has zero tolerance to PM.

2007-2008 Growing Season Spray Diary

Date	Spray(s)	Rate (g/L) or (mL/L)	Rate (L/Ha)	Comments
24-Oct	Ecocarb	4.00	450	All
	Hortoil	3.00		
6/11 -8/11	Ecocarb	4.00	600	All
	Hortoil	3.00		
5-Dec	Ecocarb	6.25	950	2 rows of Chenin - light infection
	Hortoil	4.00		
	Sulphur	6.25		
12-Dec	Ecocarb	4.00	800	whites only
	Hortoil	3.00		
18-Dec	Sulphur	6.00	800	All
	Wetter	1.00		
27-Dec	Sulphur	6.00	800	All
	Wetter	0.40		
7-Jan	Sulphur	4.00	1200	Verdelho only
	Wetter	0.80		
14-Jan	Sulphur	6.00	1200	94 cab & 96 grenache only
	Wetter	1.00		

2008-2009 Growing Season Spray Diary

Date	Spray(s)	Rate (g/L) or (mL/L)	Rate (L/Ha)	Comments
11-Oct	Ecocarb	4.00	300	Whites Only
	Hortoil	3.00		
29-Oct	Ecocarb	4.00	350	all
	Hortoil	3.00		
24-Nov	Ecocarb	4.00	450	all
	Hortoil	3.00		
15-Dec	Ecocarb	4.00	600	all
	Hortoil	3.00		
26-Dec	Ecocarb	4.00	800	Verdelho & Chenin
	Hortoil	3.00		
15-Jan	Ecocarb	4.00	900	all
	Hortoil	3.00		

2009-2010 Growing Season Spray Diary

Date	Spray(s)	Rate (g/L) or (mL/L)	Rate (L/Ha)	Comments
18-Sep	Ecocarb	4.00	300	Whites + Cab Franc
	Hortiol	3.00		
6-Oct	Ecocarb	4.00	450	Whites + Cab Franc
	Hortiol	3.00		
20-Oct	Ecocarb	4.00	450	all
	Hortiol	3.00		
	Bordeaux Mixture	1.80		
1-Oct	Ecocarb	4.00	800	all
	Hortiol	3.00		
21-Dec	Ecocarb	4.00	800	all
	Hortiol	3.00		



- Senior staff at the Waite Institute say that the level of PM infection is much less than they expected – maybe a well bedded down Organic system gives tougher vines
- We are working out how to test this
- Unsprayed Verdelho, a highly susceptible variety, remained completely clean in 2009-2010.

## Downey Mildew

- Downey Mildew is rare at Temple Bruer, although we expect the incidence and severity to increase with climate change.
- So far, Potassium Bicarbonate and minimal Bordeaux mixture provide effective control
- Botrytis is now very rare at Temple Bruer. Even in tight bunch varieties like Riesling and Chenin Blanc, Chenin definitely benefits from a light botrytis infection.
- Our organic protocol is our botryticide.

## Alternatives to Sulphur

- Moving away from Sulphur has helped to maintain biodiversity.
- Our predatory mite population is large enough to control all the bad mites.
- We have not lost any vineyard staff since 2004. Coincidence?

## Winemaking

- Organic winemaking is more minimalistic.
- Ordinary winemakers can choose from 4 pages of inputs, Organic winemakers can choose from 1 page.
- Temple Bruer only use up to 6 inputs; Sulphur dioxide, Tartaric acid, pectic enzymes, bentonite, yeast and bacteria.
- For preservative free wines we only use up to 5 inputs.
- Acid adjustment of Riesling and Verdelho is seldom required.

## Exports

- As we export to the EU, we have to use their organic rules. One important one is a maximum total sulphur dioxide of 100ppm.
- All TB wines are EU compliant
- This forced us to use less sulphur dioxide in the Winery and to restrict its use to where it would do the most good, or was unsubstitutable.
- Using our ISO9001 as a tool for continuous improvement, the low sulphur dioxide regime led to the development of a range of preservative free wines.

## Marketing

- Many consumers think there are health benefits from drinking organic wine, eg less or no headaches.
- This is hard to substantiate objectively as chemical residues in non organic wines are very low.
- The consequence is that we are in a much stronger marketing position than non organic wineries with little or no discount pressure.
- We find repeatedly that organic grapes have more flavour than their non organic neighbours maybe this goes through to the wine